

# McBasic-Gigabit

With LFPT

Operation Manual



## FCC Radio Frequency Interference Statement

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This equipment has been tested and found to comply with the limits for a Class A computing device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which the user will be required to correct the interference at his own expense. Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment. The use of non-shielded I/O cables may not guarantee compliance with FCC RFI limits. This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par le ministère des Communications du Canada.

## Limited Lifetime Warranty

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Effective for products of B&B Electronics shipped on or after May 1, 2013, B&B Electronics warrants that each such product shall be free from defects in material and workmanship for its lifetime. This limited lifetime warranty is applicable solely to the original user and is not transferable.

This warranty is expressly conditioned upon proper storage, installation, connection, operation and maintenance of products in accordance with their written specifications.

Pursuant to the warranty, within the warranty period, B&B Electronics, at its option will:

1. Replace the product with a functional equivalent;
2. Repair the product; or
3. Provide a partial refund of purchase price based on a depreciated value.

Products of other manufacturers sold by B&B Electronics are not subject to any warranty or indemnity offered by B&B Electronics, but may be subject to the warranties of the other manufacturers.

Notwithstanding the foregoing, under no circumstances shall B&B Electronics have any warranty obligations or any other liability for: (i) any defects resulting from wear and tear, accident, improper use by the buyer or use by any third party except in accordance with the written instructions or advice of the B&B Electronics or the manufacturer of the products, including without limitation surge and overvoltage conditions that exceed specified ratings, (ii) any products which have been adjusted, modified or repaired by any party other than B&B Electronics or (iii) any descriptions, illustrations, figures as to performance, drawings and particulars of weights and dimensions contained in the B&B Electronics' catalogs, price lists, marketing materials or elsewhere since they are merely intended to represent a general idea of the products and do not form part of this price quote and do not constitute a warranty of any kind, whether express or implied, as to any of the B&B Electronics' products.

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# About the McBasic-Gigabit

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McBasic-Gigabit is a low-cost, preconfigured, IEEE 802.3 single-conversion media converter that converts 1000Base-TX twisted pair to 1000Base-SX multi-mode or 1000Base-LX single-mode fiber. It is available with one RJ-45 connector for the twisted pair port and an SC connector for the fiber port.

McBasic-Gigabit is also available in a single-strand fiber version which allows two wavelengths to share one fiber strand — Full-Duplex data travels on different wavelengths (1310 nm and 1550 nm) — doubling the capacity of fiber. The McBasic-Gigabit includes one RJ-45 connector and one SC fiber connector.

NOTE
<i>All McBasic-Gigabit units, including 1310 nm single-mode (TX/LX), 850 nm multi-mode fiber (TX/SX) and single-strand versions (TX/SSLX), will be referred to as McBasic-Gigabit throughout this installation guide except where differences need to be indicated.</i>

# Installing a McBasic-Gigabit

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To install McBasic-Gigabit, first make sure that the unit is placed on a suitable flat surface. Attach the cables between the McBasic-Gigabit and each device that will be interconnected and then plug the unit into a reliable, filtered power source.

INSTALLATION TIP
<i>Since single-strand fiber products use optics that transmit and receive on two different wavelengths, you must deploy single-strand fiber products in pairs, or connect two compatible B&amp;B Electronics single-strand fiber products. For example, connect McBasic-Gigabit, TX/SSFX-SM1310-SC (which has 1310 xmt and 1550 rcv) to a product which has 1550 xmt and 1310 rcv, e.g. McGigabit, TX/SSFX-SM1550-SC. The two connected products must also have the same speed and distance capabilities (i.e. both are single-mode [20 km] or both are single/PLUS [40 km]).</i>

# AutoCross Feature for Twisted Pair Connection

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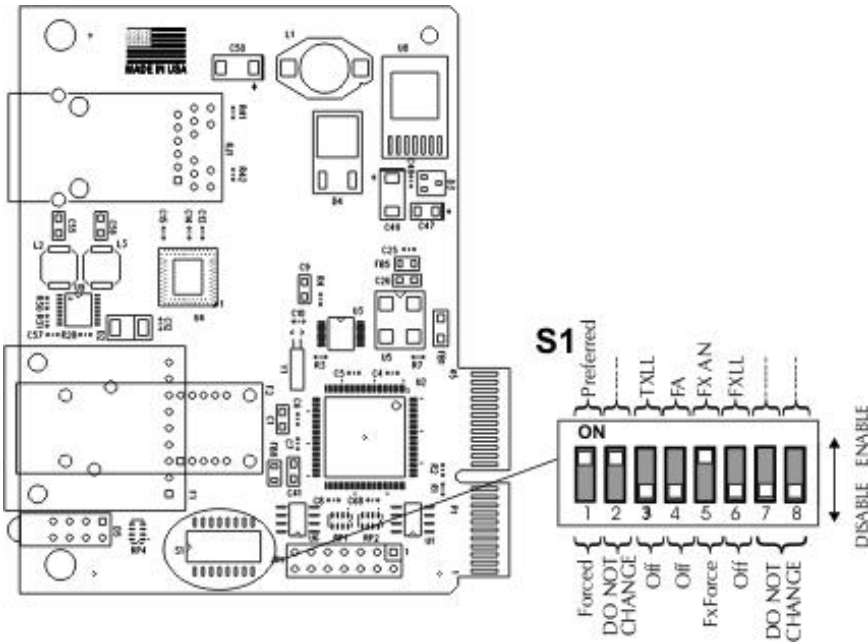
All twisted pair ports on the Managed Media Converter Module 10/100-II include AutoCross, a feature that automatically selects between a crossover workstation and a straight-through connection depending on the connected device.

# Configuration Instructions

McBasic-Gigabit has user-configurable features located on the PCB board. Please refer to the board diagram and the table for available features.

To access the McBasic-Gigabit board for configuration, loosen the two screws on the front of the unit. Slide the board out of the enclosure (faceplate is attached). Configure, then slide the board back into the enclosure and tighten the screws.

Following is the McBasic-Gigabit PCB board used to configure the unit.



McBasic-Gigabit w/LFPT

DIP Switch on S1	Feature	Default Setting
1	Forced/Preferred	ON
2	Factory use - Do not change	ON
3	TX LinkLoss	OFF
4	FiberAlert	OFF
5	FX Auto Negotiation	ON
6	FX LinkLoss	OFF
7	Factory use - Do not change	OFF

8	Factory use - Do not change	OFF
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**\*\* WARNING \*\***

***Installing modules without understanding the effects of LinkLoss and FiberAlert can cause functioning units to appear flawed or even non functional.***

## Link Integrity

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During normal operation, link integrity pulses are transmitted by all point-to-point Ethernet devices. When an B&B Electronics media converter receives valid link pulses, it knows that the device to which it is connected is up and sending pulses, and that the copper or fiber cable coming from that device is intact. The appropriate "LNK" (link) LED is lit to indicate this.

The B&B Electronics media converter also sends out link pulses from its copper and fiber transmitters, but normally has no way of knowing whether the cable to the other device is intact and the link pulses are reaching the other end. The combination of FiberAlert and LinkLoss allows this information to be obtained, even when physical access to a remote device (and its link integrity LED) is not available.

## LinkLoss, FiberAlert and Link Fault Pass-Through

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McBasic-Gigabit includes the troubleshooting features FiberAlert, TXLL, FXLL and LFPT that help locate *silent failures* on a network. Before attempting to install the module(s), understand how these features work and react to specific network configurations.

### FX LinkLoss (FXLL)

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FX LinkLoss is a troubleshooting feature. When a fault occurs on the fiber segment of a conversation, FX LinkLoss detects the fault and passes this information to the twisted pair segment. If a media converter is not receiving a fiber link, FX LinkLoss disables the transmitter on the media converter's twisted pair port. This results in a loss of link on the device connected to the twisted pair port.

### TX LinkLoss (TXLL)

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TX LinkLoss is a troubleshooting feature. When a fault occurs on the twisted pair segment of a conversion, TX LinkLoss detects the fault and passes this

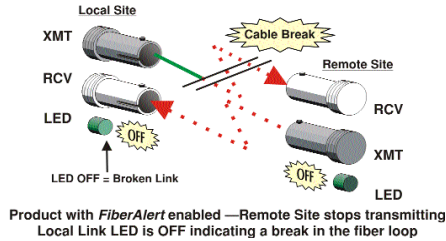
information to the fiber segment. If a media converter is not receiving a twisted pair link, TX LinkLoss disables the transmitter on the media converter's fiber port. The result is in a loss of the link on the device connected to the fiber port.

## FiberAlert (FA)

FiberAlert minimizes the problems associated with the loss of one strand of fiber. If a strand is unavailable, the B&B Electronics device at the receiver end notes the loss of link. The device will then stop transmitting data and the link

signal until a signal or link pulse

is received. The result is that the link LED on BOTH sides of the fiber connection will go out indicating a fault somewhere in the fiber loop. Using FiberAlert, a local site administrator is notified of a fault and can quickly determine where a cable fault is located.



### WARNING

***Enable FiberAlert on one side of a media conversion only. Enabling it on both sides would keep both transmitters off indefinitely.***

## Link Fault Pass-Through (LFPT)

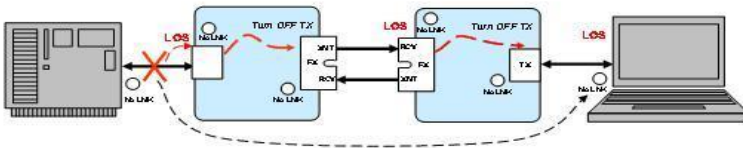
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Link Fault Pass-Through (LFPT) is a troubleshooting feature that combines TX and FX LinkLoss from both the local and remote McBasic-Gigabit modules. LFPT is enabled by turning on both FX and TX LinkLoss on both modules. This feature allows either end of the conversion to detect a link fault occurring at the other end of the media conversion chain. FiberAlert can also be enabled at the main site.

If a cable fault occurs on the remote devices' twisted pair port, then TX LinkLoss detects the fault and disable the OPTICS port.

If a cable fault occurs on the remote devices fiber optics' port, then FX LinkLoss detects the fiber loss and disables the Twisted Pair port.

The link fault is passed through the media conversion and is observed at each end. It acts just like it would if the devices were directly connected.



For more information on LinkLoss/FiberAlert, visit the B&B Electronics Web site at <http://www.bb-elec.com/Tech-Support.aspx> If unsure of how to implement these features in a specific configuration, contact B&B Electronics Technical Support at (800) 433-5109 (U.S./Canada), +353 91 792444 (Europe) or via e-mail at: [support@bb-elec.com](mailto:support@bb-elec.com).



# Additional Gigabit Features

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## Preferred/Forced Mode

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In addition to Master/Slave Modes, McBasic-Gigabit module also includes Preferred/Forced Modes for Master/Slave negotiation. Preferred Mode helps determine whether the module should act as a Master or Slave. Forced Mode should typically only be used when connecting to some legacy switches, or when there is difficulty establishing a link. The default is Preferred Mode (S1-1 is ON).

Since most switches today typically function as Masters, B&B Electronics recommends configuring McBasic-Gigabit as indicated in the table.

DIP Switch	Feature	Setting
S1-1	Preferred/ Forced	ON (Preferred)

## FX Negotiation on McBasic-Gigabit

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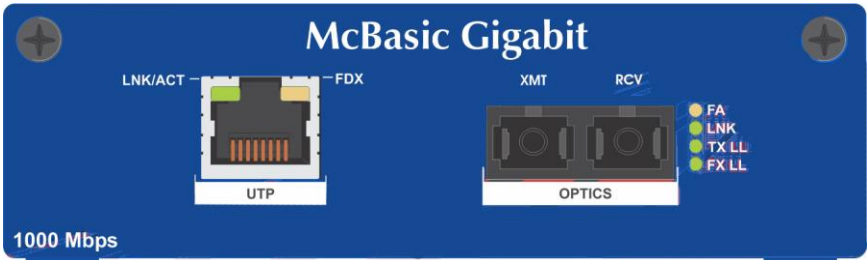
McBasic-Gigabit module includes the FX Auto Negotiation feature which negotiates duplex mode. This feature must be enabled or disabled on both ends of the connection or there may have difficulty establishing a link. If the device being connected to the McBasic-Gigabit module does not support Auto Negotiation, disabling the feature on the McBasic-Gigabit module forces the link up.

DIP Switch settings for FX AN:

DIP Switch	Setting
S1-5	FX AN = ON

# LED Operation

Each McBasic-Gigabit Converter features diagnostic LEDs that provide information on features and ports.



McBasic-Gigabit w/LFPT	
LNK/ACT	Glows green when a twisted pair link is established. Blinks green when data is detected on the port. Located on RJ-45 connector.
FDX	Glows amber when port is operating in Full-Duplex Mode on the RJ-45 connector.
FXLL	Glows green when operating in Full-Duplex Mode.
TXLL	Glows green when TX LinkLoss is enabled on the port.
LNK	Glows green when a twisted pair link is established.
FA	Glows amber when FiberAlert is enabled.

## Troubleshooting

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- During installation, first test the fiber and twisted pair connections with all Troubleshooting features disabled, then enable these features, if desired, just before final installation. This will reduce the features' interference with testing.

If using a high powered device (which is designed for long distance installations) for a short distance installation, the fiber transmitters may overdrive the receivers and cause data loss. If this is the case, an optical attenuator may need to be added to the connection.

For fiber specifications, visit the B&B Electronics Web site at: [www.bb-elec.com](http://www.bb-elec.com) or contact B&B Electronics for more information.

## Specifications

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### Environmental

#### Operating Temperature

+32°F to +122°F (0°C to +50°C)

#### Storage Temperature

+13°F to 185°F (-25°C to +85°C)

#### Humidity

5 - 95% (non-condensing)

#### Power Consumption (Typical)

McBasic-Gigabit w/LFPT: 100 to 240 VAC, 50/60Hz, 0.2 to 0.1A

## B&B Electronics Technical Support

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**Tel:** (800) 346-3119 (in the U.S. and Canada)

Monday-Friday, 7:00am-7:00pm CST

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**Web:** [www.bb-elec.com](http://www.bb-elec.com)

## **Fiber Optic Cleaning Guidelines**

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Fiber Optic transmitters and receivers are extremely susceptible to contamination by particles of dirt or dust, which can obstruct the optic path and cause performance degradation. Good system performance requires clean optics and connector ferrules.

1. Use fiber patch cords (or connectors, if you terminate your own fiber) only from a reputable supplier; low-quality components can cause many hard-to-diagnose problems in an installation.
2. Dust caps are installed at B&B Electronics to ensure factory-clean optical devices. These protective caps should not be removed until the moment of connecting the fiber cable to the device. Should it be necessary to disconnect the fiber device, reinstall the protective dust caps.
3. Store spare caps in a dust-free environment such as a sealed plastic bag or box so that when reinstalled they do not introduce any contamination to the optics.
4. If you suspect that the optics have been contaminated, alternate between blasting with clean, dry, compressed air and flushing with methanol to remove particles of dirt.

## **Electrostatic Discharge Precautions**

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Electrostatic discharge (ESD) can cause damage to any product, add-in modules or stand alone units, containing electronic components. Always observe the following precautions when installing or handling these kinds of products

1. Do not remove unit from its protective packaging until ready to install.
2. Wear an ESD wrist grounding strap before handling any module or component. If the wrist strap is not available, maintain grounded contact with the system unit throughout any procedure requiring ESD protection.
3. Hold the units by the edges; do not touch the electronic components or gold connectors.
4. After removal, always place the boards on a grounded, static-free surface, ESD pad or in a proper ESD bag. Do not slide the modules or stand alone units over any surface.



**WARNING!** Integrated circuits and fiber optic components are extremely susceptible to electrostatic discharge damage. Do not handle these components directly unless you are a qualified service technician and use tools and techniques that conform to accepted industry practices.

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## Safety Certifications

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UL/CUL: Listed to Safety of Information Technology Equipment, including Electrical Business Equipment.

CE: The products described herein comply with the Council Directive on Electromagnetic Compatibility (2004/108/EC) and the Council Directive on Electrical Equipment Designed for use within Certain Voltage Limits (2006/95/EC). Certified to Safety of Information Technology Equipment, Including Electrical Business Equipment. For further details, contact B&B Electronics.



**Class 1 Laser product, Luokan 1 Laserlaite,  
Laser Klasse 1, Appareil A' Laser de Classe 1**

European Directive 2002/96/EC (WEEE) requires that any equipment that bears this symbol on product or packaging must not be disposed of with unsorted municipal waste. This symbol indicates that the equipment should be disposed of separately from regular household waste. It is the consumer's responsibility to dispose of this and all equipment so marked through designated collection facilities appointed by government or local authorities. Following these steps through proper disposal and recycling will help prevent potential negative consequences to the environment and human health. For more detailed information about proper disposal, please contact local authorities, waste disposal services, or the point of purchase for this equipment.







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**Document Number 55-80913-01 A4**

**October 2013**